EDGE CABLE HOLDINGS USA LLC

HORIZONTAL DIRECTIONAL DRILL CONSTRUCTION PLAN

January 2021

1. Overview

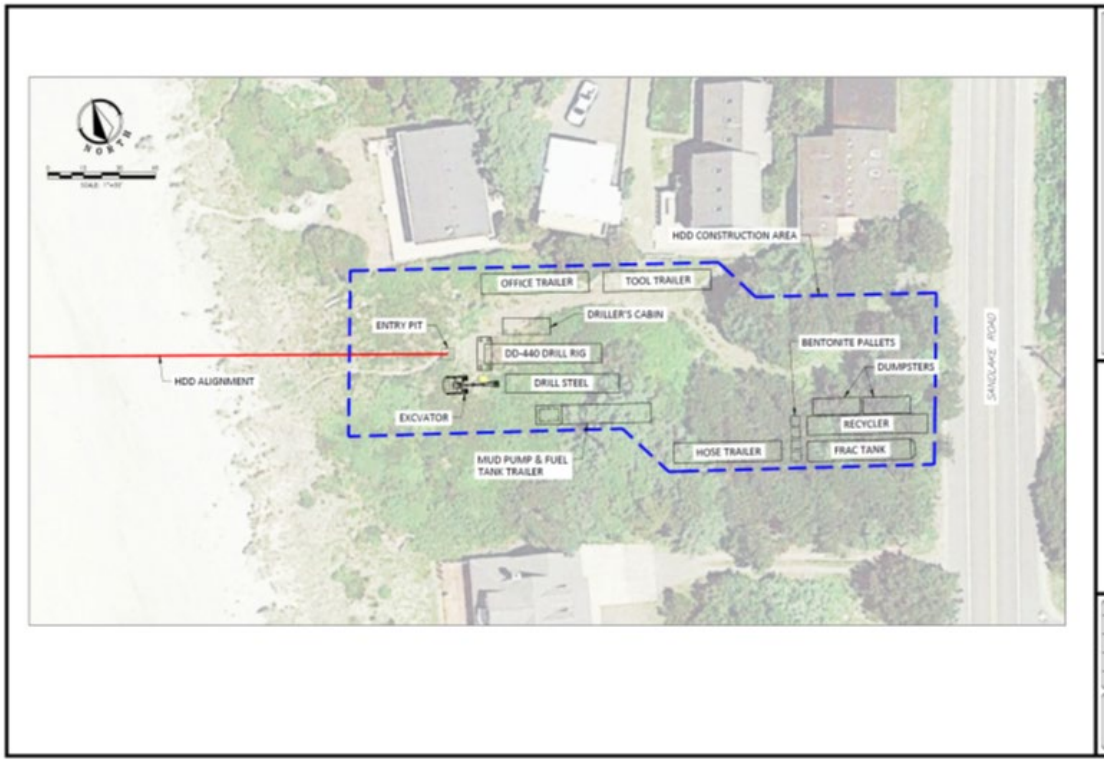
The purpose of this Horizontal Directional Drill (HDD) Construction Plan is to facilitate the construction of one (1) HDD approximately two thousand, eight hundred (2,800) feet in length, the installation of one (1) Beach Manhole (BMH), and one conduit from the BMH on Lot 3200 connecting to the conduit from the cable station presently located in the public right-of-way of Sandlake Road, Pacific City, Tillamook County, Oregon. This HDD Construction Plan may be revised as the 2020 geotechnical data is further analyzed or as feedback is received from stakeholder agencies.

As provided in greater detail below:

- The HDD punch in location is on Lot 3200.
- The center point of the BMH will be located at approximately N 45°14.87709', W 123°58.02628'
- The HDD shall use the “drill and leave” method of a 6-5/8” drill pipe (6.48” Outside Diameter (OD), 5.90” Inside Diameter (ID) steel drill pipe. Approximately 900 ft. of casing is planned at this time.
- The punch out is to be at ~26 ft WD at approximately N 45°15’00.97”, W 123° 58’39.19”. Pull back to be ~3.2 feet below seabed.
- Supply and installation of one (1) BMH to include site grading and restoration.

The overview of the Jupiter HDD project is shown in the figure below:

Provisional overview of the works to be completed at Lot 3200: HDD Site Set Up



1.1. Scope of Work

The purpose of the HDD work is to install a steel pipe for the protection of a Submarine FOC at shore crossing from the beach seawards, for the Jupiter project, as per the below bullets:

- The punch out is to be at ~26 feet WD at approximately 2,800 feet away from punch in.
- Pull back to be ~3.2 feet below seabed.
- Installation of one HDD steel drill pipe 6-5/8" (6.48") Outside Diameter (OD), (5.90") Inside Diameter (ID)
- Install one (1) 3/8 inch stainless steel wire in bore.

The bullet points below describe the entire scope of Contractor's work on the project:

- Project planning and management of the HDD operations in accordance with all project permits, approvals, and plans including the Drill Break Avoidance Plan, the Drill Break Response Plan, and the Emergency Response Plan.
- HDD Engineering & Design
- Project operational permitting and local authorizations for all activities under this SOW will be in accordance with any / all guidelines as identified within the in-principle permitting.
- Schedule of the estimated work scope
- Security on work sites (if/as required)
- Safe working practice on work sites
- Daily reporting
- Pre-Drilling Activities
- Site area preparation, as required
- Silt Fencing installation
- Entry pit excavation and HDD rig / associated equipment set up & testing
- Existing utilities location & marking
- Drilling Activities, including casing installation and removal
- Pilot Bore Formation
- Mud mixing
- Mud return monitoring
- Mud handling & disposal
- Drill tracking & logging using gyro system
- "Drill & Leave" steel pipe installation
- Post Drilling Activities and Duct Protection
- Drill head assembly removal and recovery
- Duct mandreling
- Messenger line installation (3/8" wire rope) through the entire pipe length
- Slip-On Duckbill with Stainless Clamp
- Security for onshore and offshore operations including all warning / safety signs and guards

  Provision of HDD machine, steel drill pipe, drilling fluid, drilling tools, diver support/ guard boats and other necessary peripheral equipment
- QC of positioning, drill and duct
- Restoration of work-site to original or better condition
- Reporting documentation, including as-built drawings

2. PROJECT TERMS, ABBREVIATIONS, AND REFERENCE DOCUMENTS

2.1. Project Specific Terms

Term	Description
SubCom	SubCom LLC
Contractor	Carson Corporation

2.2. Abbreviations

Abbreviation	Description
AB	As-Built
AC	Alter Course
C/W	Complete With
DGPS	Differential Global Positioning System
GB	Guard Boat
HAT	High Astronomical Tide
HDD	Horizontal Directional Drilling
HDPE	High Density Polyethylene
HIRA	Hazard Identification and Risk Assessment
HSE	Health, Safety, and Environmental
IS	In Service
JSA	Job Safety Analysis
KP	Kilometric Point
LAT	Low Astronomical Tide
M/T	Metric Ton
MOC	Management of Change
MSDS	Material Safety Data Sheet
OOS	Out of Service
PMT	Project Management Team
PPE	Personal Protective Equipment
PTW	Permit To Work
RPL	Route Position List
RTK GPS	Real Time Kinematic GPS System
SOW	Scope of Work (Section 1.1)
SWL	Safe Working Load
TBT	Tool Box Talk
VHF	Very High Frequency
UHF	Ultra High Frequency
WD	Water Depth

2.3. Title Abbreviations

Title Abbreviation	Definition
EIC	Contractor Engineer In Charge
PE	Contractor Project Engineer
PM	Contractor Project Manager

3. ROLES AND RESPONSIBILITIES

Key roles and responsibilities as specific to this operation are noted as:

3.1. SUBCOM

3.1.1. Onshore Representative

- Liaison with Contractor
- Supervision of all Contractor activities
- PTW Coordination (Subcom to review and approve Contractor's PTW as applicable)

3.2. CONTRACTOR

3.2.1. Project Manager

- Management of the project operational phase
- Responsible for the timely execution of the project milestones
- Responsible for the timely submission and amendment of all required documentation as well as for the submission of the daily reports

3.2.2. Engineer In Charge

- Manage the interface between the design/planning aspects of the project and the on-site project execution team
- Management of daily operations
- Responsible for the timely execution of the site preparation
- Co-ordinate with all other functions to ensure the schedule is adhered to
- Communication of the HSE Plan & Program / Chair the daily meetings, TBT's & HSE meetings
- Coordinate all relevant teams & local subcontractors for the duration of the entire work scope
- Liaise with local authorities and community throughout the duration of the works
- Supervise all activities carried out by subcontractors

3.2.3. Drilling Superintendent

- Monitor and supervise all site preparations and drilling operations
- Check and approve site and drill rig set up prior to operations commencement
- Continuously monitor sediment and fluids returns from the borehole/locator readings/any abnormal fluctuations in mud pump pressure or thrust levels and advise drill rig operator for mitigating measures
- Verify proper progress of drilling operations
- Coordinate the aforementioned operators and ensure safety, good engineering practice and proper recording of the as-laid data
- Provide the EIC with all data/information/clarifications requested

3.2.4. Diving Supervisor

- Responsible to conduct all dive operations to safe operational standards
- Responsible for the planning, implementation and supervision of all dive operations
- Responsible for conducting all dive operation's Job Safety Analysis and Risk assessments
- Responsible to organize the diver's rotation
- Responsible for all dive equipment to be in good working order (Certificates, Function Tests etc.)

4. PROGRESS REPORTING

4.1. Daily Progress Reports

A Daily Progress Report (DPR) will be emailed to SubCom on completion of each working day. A signed copy of the DPR will be provided to SubCom's Representative.

The exact content and distribution of the DPR will be discussed and agreed with SubCom 's onshore representative prior to the start of the operations. However, the below shall be monitored and included in the daily reports as a minimum:

A record of the drilling parameters and the quantities of the drilling fluid used during the entire drilling operation shall be maintained. This record shall include the following information and will be submitted to SubCom's Representative on a daily basis:

- Position of the drilling head relative to the drilling point of entry
- Recording the total volume of drilling fluid that has been pumped during the drilling operation
- Recording a visual estimate of the total return volumes
- Equipment breakdowns and repairs
- Any abnormal drilling fluid pressure at the time of occurrence
- The time and location of the bore head when drilling fluid returns are either lost or regained
- The type and quantity of drilling fluid components
- The amount of drilling fluid in the system at the start of the drilling operation
- The location of the bore head, and estimated quantity of water, Bentonite, and other additives that were added to the system at the end of each day

- An estimation of the current borehole and contained volume, the amount of drilling fluid in the system, the amount of fluid added to the system, the amount of waste removed from the system, and the amount of fluid lost
- The DPR will be issued from the start of the mobilization process until the end of the demobilization process.

4.2. As-Built Reports

Contractor will provide an as-built report as well as all bore logs for the HDD operations, including the as-built data in tabular format, as-built drawings and site plans, sketches and depth profiles, as well as all required deliverables as per the SOW. Contractor will provide soft copies of the provisional report within 14 calendar days post-demobilization. Contractor will provide soft copies of the final as-laid HDD report within 14 calendar days of receiving the provisional report review comments from SubCom's EIC as per SOW.

4.3. Management of Change

In the event that any unplanned circumstances affect this procedure, then this procedure can be changed to ensure the safety and efficiency of the operation. Contractor EIC will notify all parties involved of any unplanned circumstances and advise of the appropriate corrective action in writing.

5. HEALTH, SAFETY, WELFARE & SITE RULES

5.1. General

All operations shall conform to the requirements of the Health & Safety/Environment Management Plans. Safety is of utmost importance on all Contractor projects. All works shall be in accordance with all governing safety regulations, and applicable local rules and guidelines.

5.2. Risk Management

Contractor recognizes that many of the activities involved in this project are potentially very high risk. These risks will be managed to ensure that they are as low as reasonably practicable. To achieve this, every procedure will be subject to a rigorous risk assessment and a HIRA will be developed to catalogue and categorize these risks and to list and develop mitigation factors.

6. HDD OPERATIONS

6.1. Preparations

The following section indicates the preparation activities to take place prior to commencing the HDD operations.

6.1.1. Mobilization of HDD Machine, Consumables & Support Vessels

The selected HDD machine for this project is complete with all the necessary equipment required for the drill's formation and the installation of the selected rods. All consumables for the operation will be transported to the site using dedicated trucks.

6.1.2. Site Preparation & HDD Equipment Set up

The procedure to be followed consists of three stages. First, a perimeter will be set and the site will be clearly signposted informing the general public of the work in progress while limiting access to the site. In continuation, all the equipment necessary for the pit excavation and drill rig installation will be transported to the site pending the excavation of the pit and the final positioning of all necessary tools and equipment.

Site Area & Entry pit preparation

Once the site area is prepared, the drill entry pit will be formed in line with the HDD Rig, in order to contain the mud returning from the bore while drilling. Furthermore, a pit pump will be set in place next to the mud receiving drill entry pit in order to pump out the returning fluid, feeding it to the recycling unit for further treatment, adjustment and reuse as mentioned below.

Worksite signs & Safety

The worksite will be sign-posted, and all safety measures will be taken to ensure jobsite safety. The edges of the drilled pits will be cordoned off at a distance of ~3 feet to avoid accidental falls and all safety markings will be clearly visible during night-time operations. Standard PPE will be available and mandatory to be worn by all personnel present in the site including helmets, gloves, goggles, overalls etc.

Equipment set up

The equipment will be set up according to the latest site plans that will be created as part of the final project engineering phase. A number of factors will be taken into account including operational efficiency, health and safety regulations and ergonomics, as well as the particularities of the project.

HDD Rig & Drill Pipe

The HDD machine will be placed in position and prepared for operations following stake out of the drill entry and alignment by the surveyor utilizing an RTK GPS. Drill pipes will be stacked next to the drill rig. The same will be flushed clean and marked prior to employment in the drill string. Their placement on the drill rig will be conducted by a backhoe / small excavator stationed next to the drill rig as necessary.

Mud Mixing / Recycling Unit & Water Supply

A recycling unit shall be employed so as to reuse the drilling fluid exiting from the drill entry point during the pilot bore formation. This will minimize the use of fresh water for the mixing and will reduce the risk of drilling fluid leak in the surrounding area.

The recycling unit chosen for these operations is Tulsa Rig Iron M C S -750 Bentonite Mixing and Recycling Unit. The recycling unit will be placed in a position facilitating operation and connection to the water supply, settlement tank returns and the high-pressure mud pump paired to the Drill Rig. The mixing / recycling unit can be seen below:

Mixing / Recycling Unit

It is currently considered that water supply will be provided by a water tank of approximately 22,000 Gallons of capacity which shall be fed by water trucks of approximately 4,000 Gallons. The capacity of the truck as well as the capacity of the water tank shall be confirmed at a later stage.

High Pressure Mud Pump

A high pressure mud pump shall be also employed in order to ensure mud feed to the HDD rig for efficient drilling operations, as indicated in the equipment list.

Drilling fluid containment

The produced sediment does not constitute harmful substance to the environment and the surrounding area as bentonite is a naturally occurred substance whilst all the additives employed for saltwater tolerance are biodegradable. The use of the recycling unit will ensure that the drilling fluid shall be minimal, and the risk of non-containment is minimized significantly.

On top of the above, due to the nature of the installation, the last ~150 ft of the pilot bore will be mud-free, with fresh water being fed in the bore, flushing out the drilling fluid so that there will be no mud escaping the bore at the punch out position. The exact length of flushing shall be decided on site, depending on the drilling findings and the actual drilled material at the end of the pilot bore. Having assessed the above, a calculation of the drilling rate combined with the drilling fluid volume in the pipeline will be made so as to start pumping water in the system in order to displace the entire amount of mud from the drill-string by the time that punch out will occur.

6.2. HDD operations

HDD operations will be carried in a coordinated manner between the driller and the drilling superintendent. The pilot bore drilling process shall be closely monitored utilizing a steering system with a gyro compass and logs will be kept over the entire duration of the operations. The drill design will be followed so that the achievable drill will be within acceptable tolerances

There will be only 1x shift of 9 working hours per day. Expected downtime includes the time spent for the wire- line splicing for each rod added to the bore, as well as the rod additions themselves. Unforeseen downtime includes potential equipment breakdown, extreme rainy weather conditions as well as the time-consuming contingency measures taken in the case of an inadvertent release during the pilot bore construction phase.

6.2.1. Steel Casing Installation

Based on initial geotechnical survey results, a casing will be installed. This will ensure the following:

- To help minimize risk of an inadvertent release during drilling operations
- The drilling fluid returns will be maintained over this length which will be the most susceptible to collapsing.
- The pushing capability of the drill string will be enhanced at the end of the path, as the snaking of the string in the casing will be eliminated.

The present plan for casing consists of steel pipes of 16” and 18” OD. There will be 300’ of 18” casing installed first. Then, there will be 900’ of 16” casing installed inside the 18” casing. The 300’ of overlap between the two casings will make the extraction of the 900’ of 16” primary casing easier. The final casing length may be revised prior to beginning 2021 HDD Operations.

Casing Segments (for illustration purposes only)

Following drilling a pilot bore up to the maximum casing reach using conventional drill pipe, the drill string will be disengaged from the HDD rig and an adaptor will be fitted on the rig with one end flanged. Subsequently, the first 18” screw in casing segment shall be bolted on the adaptor and will be pushed into the ground using the drill string as a guide. Rotation of the casing will take place as/if required, depending on the pushing forces encountered on the rig.

Typical Casing Adaptor

Once the first casing segment is in the ground, the adaptor will be detached, and the next 18” casing segment will be bolted on the adaptor. The casing’s other end will then be connected to the first segment’s free end. Once completed, the rig will push both segments in the ground. This process shall take place until all necessary 18” casing segments are inserted ~300’ in the ground. After the 18” casing installation is complete, the pilot bore will continue until approximately 1,000’ from entry. Then, 16” screw-together casing will then be installed for approximately 900’. Normal drilling operations will then resume once all the 16” and 18” casing is installed.

Following that, the drill string will be pulled back while pumping small amounts of mud in order to fluidize the sediment encased in the casing. Once the mud returns are obvious at the drill entry pit, the drill string will be pushed forward by pumping larger volume of mud so that all the residues within the casing return back to the entry pit. Once the drilling string reaches the bottom end of the casing, normal drilling operations will resume.

6.2.2. Drilling Tolerances & Steering

The method employed to monitor the progress of the pilot bore necessitates the use of a gyro compass, in order to provide sufficient data so that the drill bit's relative position is real-time recorded throughout the entire drilling operation during the pilot bore formation.

The gyro is responsible to transmit such signal able to provide real-time information regarding the drill bit's azimuth, vertical distance from the previously laid and positioned coil(s) which is translated as depth as well as its coordinates (latitude – longitude).

All information transmitted is constantly displayed in a remote monitor mounted on the HDD machine so that the operator is always aware of the bore's progress precision. Drilling patterns are continuously developed and followed by the steering engineer and the driller so as to apply the necessary corrections in order to conform with the predesigned profile.

The bore alignment shall follow the reference alignment shown on the plans and shall be accurate to within the tolerances dictated in the SOW.

The configuration of the drill head assembly shall be determined following the implementation and the processing of the results of the geophysical and geotechnical survey. A new HDD profile shall be also prepared once the results of the geophysical and the geotechnical survey are made available.

6.3. Drilling Fluid

The preparation of drilling mud requires the use of a large volume of water, drilling additives and a mixing unit. The drilling fluid powder to be used contains ~98% bentonite in the form of small particles. The dust that will be produced when pouring the bentonite in the mixing unit poses an inhalation hazard for the worker that does the mixing. Appropriate PPE will be worn by personnel in close proximity to the mixing process including dust masks and eye protection.

There are various components in the drilling mud that enhance borehole stabilization, fluid carrying capacity and water characteristics. A polymer additive will be available on-site to be employed in the drilling fluid in negligible concentration (~0.5Kg per m3 of drilling fluid) as and only if required in order to enhance the bore stability by strengthening the filter-cake being formed on the bore walls during the drilling operation.

All components are biodegradable and non-toxic/environmentally friendly.

The drilling mud to be used for each day's work will be prepared in the beginning of the day with adequate time (typically 30 minutes) provided for thorough mixing and adjustment of the mud's properties according to the previous day's findings and the manufacturer's specification.

Rheological Adjustments

Specially assigned personnel (Mud Technician/Engineer) will be monitoring the return fluids from the borehole in order to determine % hole cleaning and drilling mud carrying capacities. Modifications in the drilling mud composition or rheological characteristics may be required as the drill will pass through different substrates in order to ensure proper borehole stabilization and filter-cake formation.

Mud Recycling & Sludge Removal

The volume of fluids and cuttings produced will be removed from the drilling pit in regular intervals or continuously if required and being prepared for recycling where/when possible. Solids can be optically assessed with accuracy after the fluid turbidity clears and the volume of

fluids can be also calculated so that comparison can take place between the calculated volume accruing from the borehole length / drilled cross-sectional area and the actual recycled quantity.

Sludge disposal

Solid and liquid sludge that cannot be recycled further will be transported by a vacuum truck and disposed-off at a designated location by the selected local subcontractor.

6.4. Conduit Installation

6.4.1. Steel Pipe Installation

This HDD installation will be implemented in a “drill & leave” manner. This entails drilling with steel drill pipes and leaving them in place once the pilot bore is completed. The drilling head will be removed by divers either by hot-works or by mechanical means leaving the punch-out pipe end without any sharp edges or anomalies.

The drill pipe should be equal or better double white banded, schedule g or s, smooth wall, threaded drill pipe.

The test Certificate for the pipes will be available and can be provided upon request.

Pipe gauging / Messenger line placement / Pipe ends sealing

Once the pipe is installed, it will be mandreled through its entire length to prove the minimum ID required and to ensure that no abnormalities, which may affect the future cable landing, are existent. After the pipe inspection, a messenger line along with a flapper valve at the seaward end will be installed to prevent any sediment and/or debris to insert in the pipe ends.

7. MARINE/DIVING SUPPORT

Marine and Diving support shall be utilized from the punch-out occurrence up to the end of the operation and will be involved in the below tasks:

- Punch out position inspection and drill head removal
- Turbidity curtain installation and monitoring (if required)
- Installation of duckbill valve
- Support during mandreling and messenger line installation

After the completion of operations, the HDD punch-out location will be marked with a buoy / float to make it easy to locate / identify.

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